

ABSTRACT OF THE DISCLOSURE

An observed signal that is corrupted with impulse noise is recorded in a signal processing system of an image processing system or a digital subscriber line (xDSL). The observed signal that is recorded by the signal processing system includes a noise component and data component. The signal processing system estimates the parameters of an alpha-stable distribution using a modified iteratively reweighted least squares (IRLS) technique. The estimated parameters define a probability density function that is used to model the noise component of the observed signal. Once the parameters of the alpha-stable distribution are estimated, the signal processing system uses them to estimate model coefficients of a non-linear prediction filter such as a Volterra filter. Using the model coefficients, the non-linear prediction filter estimates the data component of the observed signal.